32

ELECTRICITY on the FARM

November 1939

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THE NATIONAL MAGAZINE of RURAL ELECTRIFICATION

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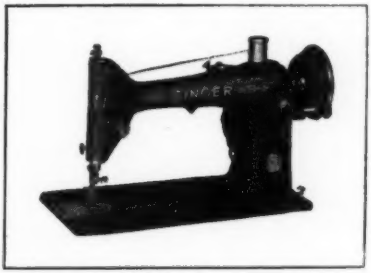

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Editor's Chat

BARN VENTILATION

A few years back, a cupola on a barn was a pigeon roost and an ornament erected to the glory of the builder. Today, ventilation, of which the cupola was a symbol, is arousing more and more interest and discussion among dairymen and agricultural engineers, not as an air and bird inlet to a haymow, but as a factor in the economic production of milk. It is not ventilators we are interested in, but the environmental factors in barns which affect cows and which may be brought about, at least in part, through proper ventilation. Those factors include not only fresh air, but moisture, temperature, odors, drafts and light. Mr. Stapleton has properly said elsewhere in this issue that it is air conditioning and not just ventilation that is involved.

The movement of air through a barn electrically or otherwise has the possibilities of regulating the air purity, the moisture content, the temperature and the removal of odors. The results are to be measured in the health and comfort of the cows and the men working with them, in improved sanitation and the ability to produce quality milk, in the life of the structure due to the effect of moisture on materials, and in operating costs including repairs, painting, sickness, etc. Winter air conditioning in barns in its present stage of development can hardly be considered as a cure-all or as the most important factor in production. It is, however, one of those opportunities to get a little more out of the cows, out of the dollar invested and out of the men who do the work.

SMOKE

It is October 10. The banks and woods along the Long Island R.R. are purple with wild asters and mixed red with maturing sumac. Leaves are acquiring beautiful fall hues. We have had a reasonably good year; at least we have not been driven from our homes by war, nor lost our loved ones through battle or enlistment. We have food. We have friends. We have freedom, and a future to look forward to—a future much brighter than that of many. We have much to be thankful for.

The car I am in is full of smoke. I moved to get away from a fragrant old pipe, and now I am surrounded by ladies—bless them—smoking cigarettes. There are school girls, gray haired grandmas, business women and housewives all puffing contentedly or with conscious display of a glamorous sophistication. It's not the women, however, but the smoke, I am thinking of. It fills the car. But if the doors and windows were opened, so much fresh air would rush in that the smoke would be crowded out and forgotten. And so with our minds! If we open them to fresh, cheerful thoughts and the beauty about us, and fill them full enough, the smoke of discontent, jealousy, imagined ills and wrongs will be crowded out. We will be thankful.

POWER

"In this country there is now expended about 13.5 horsepower hours per day per capita —the equivalent of a hundred human slaves for each of us; in England the figure is 6.7, in Germany 6, in France 4.5, in Japan 1.8, in Russia .9, in China .5. In the last analysis, this use of power is why our most important social changes have come about.

"This is why we no longer drive our ships with human slaves chained to the oars, as did the Romans and the Greeks. This is why 10 times as many boys and girls are in the high school today in the United States as were there in 1890. This is why we have now an eight hour day instead of, as then, a 10, a 12—or sometimes a 14-hour day. This is why we have on the average an automobile for every family, why unskilled labor gets nearly twice as much in real wages in the United States as in England, three times as much as in Germany or France, and 13 times as much as in Russia."—Dr. Robert A. Milliken, California Institute of Technology.

Agriculture is one of the nation's large users of power. Agriculture is usually about 25 years behind industry in learning to use power advantageously—steam engines, gas engines, and now electricity. The "twenty-five years" for electricity in agriculture is about ended. Those persons who take advantage of new, sound developments early usually profit most. Witness: Fords, Stark's Delicious; hybrid seed corn.

—I'm proud I am a farmer—

One of the greatest pleasures I have as editor is OKing checks which go to farm readers for little items they have sent us in letters telling of new or novel ways in which electricity has brought them pleasure or profit.

George Kable

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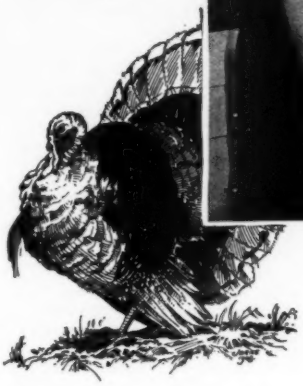
THANKSGIVING DINNER

Read and Get Hungry! Just an Old Fashioned Turkey Dinner—But in a New Fashioned Way, with Time to Go to Church



By VERA B. MEACHAM

NO matter what I plan to start with, our Thanksgiving dinner stays pretty much the same year after year. To be sure some years we may abandon chilled grape fruit for grape juice with a shaved crescent of orange floating on top; that much variety the family sanctions—if they even notice it—but for the dinner itself, the turkey must be flanked with mashed potatoes and sweet, helped out by a casserole of creamed onions burbling in white sauce.

I have served the sweet potatoes in orange shells, a yellow ring around the turkey. They look very nice when we bring in the platter, but my husband stumbles over them when he is carving, so I do not put them there any more.

Some years we used glaced apricots or boiled pineapple as turkey trimming. Usually though, we come back to cranberry jelly made in little salad molds and turned upside down around the edge of the platter.

We do waver a little on salads. More often than not, we have just lettuce tossed in a French dressing in a big wooden bowl. Yet sometimes I make a molded salad or stuff red cinnamon apples with celery and nuts.

The dinner ends strictly in accord with tradition, mince and pumpkin pie. And the friends who have had Thanksgiving dinner with us for the last decade have learned to follow our childhood custom and take a narrow wedge of each.

No one would claim that there is anything inspired about this dinner. But besides being the dinner we like, it has another very great advantage. I can get it and still go to church on Thanksgiving morning.

It means I begin on Monday or Tuesday with making the rolls and fixing the cranberries. They can both stay in the refrigerator until I am ready to take them out on Thursday morning.

Tuesday evening we stuff the turkey. That is an editorial we, because my husband always stuffs the turkey at our house. He has been inventing turkey dressing ever since we have kept house.

Last year he made it by putting together six cups of coarse bread crumbs, one cup of milk, three tablespoons of melted butter and five of melted fat (any kind), the pulp of two oranges, one apple, half a cup of chopped onion, a cup of chopped celery, two egg yolks, boiled, and three-fourths of a cup of Brazil nuts.

When he has the mixture started, he begins to season it with salt, paprika, poultry seasoning, summer savory, sage and just a dash of nutmeg and black pepper. He seasons and tastes, seasons and tastes until the dressing has just the right zest.

After the turkey is stuffed and put away in the refrigerator, it is off my mind until time for it to go in the oven Thursday morning.

Wednesday I get most of the dinner. I make the mince pie and roll out the crust for the pumpkin. By wrapping it tightly in waxed paper and putting

The electric mixer has a hand in getting Thanksgiving dinner easily. Beginning with kneading the rolls, making the mayonnaise, mixing the cake and beating the frosting, it continues by mashing the potatoes in a hurry, and ends up by whipping the cream to top the pumpkin pie.

It is not only on Thanksgiving day that the new electric ranges prove their worth. The ovens have splendid insulation and accurate heat controls, and are easy to work over and economical to run. Top units come in two sizes, and many of the ranges have surface units with five speeds. Because the time and the temperatures are right, these ranges turn out the same good results every day of the year.

it in the refrigerator, I keep it ready for the morrow's baking. While the pie bakes, I make a white sauce and parboil the onions so they will need very little cooking next day.

If I'm having grape fruit, I get them ready and put them in the refrigerator with waxed paper over the cut side. If it is grape juice, I open the bottle and fix it up ready to serve from a covered pitcher that fits in the refrigerator.

On Wedneday I make the salad dressing and the salad, too, if it needs any making. Since I can keep it cold and firm, I do not have to give it a thought until I am ready to turn it out on the salad plates. The last thing at night I set the table for dinner. My family will eat at the breakfast counter in the kitchen in the morning.

Refrigerator Simplifies Preparation

The first part of the week, as you can see, I lean heavily on my electric refrigerator for help in getting that dinner on time, but on Thursday morning, the electric range goes into action.

After I have taken out a batch of the dough for rolls and set it in a warm place to rise, I start baking the pumpkin pie. When the pie comes out, the turkey goes in to sizzle and brown the rest of the morning while we are at church. Peeling the potatoes, getting out pickles and jelly, putting the plates in the warming oven, and making the dough into rolls fills up a busy morning.

After church comes the rush of getting the potatoes cooked, the onions and rolls in the oven and the gravy made. The electric mixer mashes the potatoes when they are done, and the warming oven keeps the turkey hot while the rolls bake.

I have a grand new coffee maker that takes all the responsibility for that important job off my hands. I measure the water and the coffee and plug in the cord. The heating element is right in the bottom of the lower pot, which is the server too, and it has an automatic control that brews the coffee at just the right temperature until it is done, then switches to low heat, all by itself, mind you, and keeps the coffee hot until we are ready for it.

I used to worry about the coffee, and sometimes my guests would leave half a cup to cool, and showed no interest in seconds. But not any more. Even though I didn't make coffee often enough to be sure of it with my older methods, now this coffee maker produces grand coffee every time.

So it really doesn't take very long after we get home before dinner is on the table, and we are all sitting around—soberly sometimes, as on years like this—telling each other what we have to be particularly grateful for this Thanksgiving Day.

Then when the last crumb of pie has disappeared and the last drop of coffee has gone, the men no longer hurry out of doors for a good long walk, and we women folks do not face the kitchen with a sigh, and a weary half hidden wonder whether even a national holiday is worth all those dishes.

Not any more at our house.

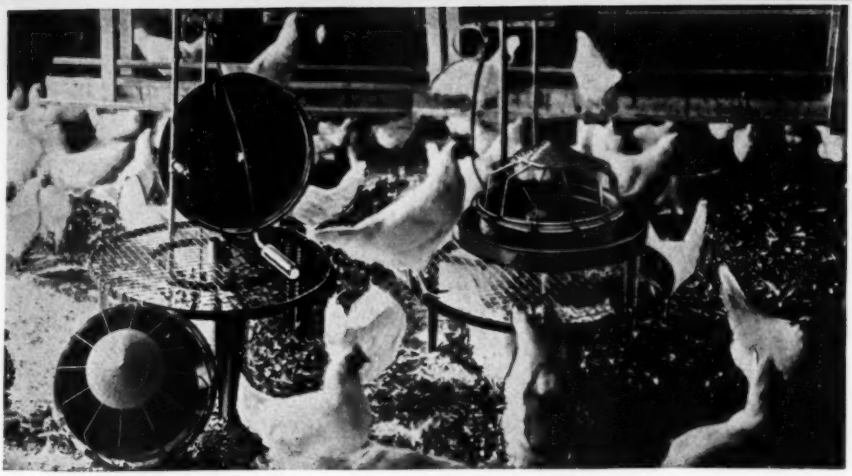
We just get up, scrape the dishes and pile them in my new dishwasher. Then we put in the washing powder, and press one lever to start the motor and turn on the water and another to close the drain. When a gallon of water has run into the machine, the water turns off automatically. When we hear it click, we glance at the clock so we can time the five minute wash while we are putting away food and scraping pans.

Then we turn the levers back again to stop the motor and drain out the water. A half minute rinse, and a longer minute and a half rinse—just by turning a couple of handles each time, remember. And the dishes are clean.

We lift the cover and let the air dry them quickly. The water is soft and hot, so we do not really need to wipe them at all, though sometimes we catch a few drops on the silver and rub them off as we are putting it away.

The pots and kettles, did you say? We scrape what we would have to scrape if we washed them in a dishpan, pile them in a second load and let the machine wash them, too.

The turkey roaster and the platter are too big to go in, so I will have to wash them on Friday by hand. Shall I mourn over that with all the rest of the dishes for a Thanksgiving dinner washed and rinsed in two six and a half minute runs? Not me. I'm grateful.



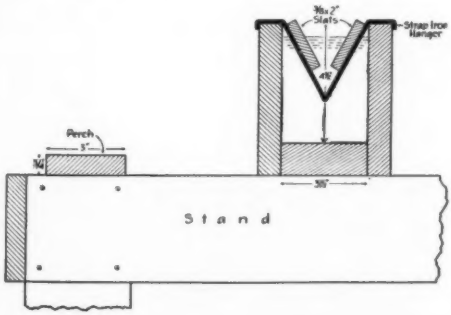
A refrigerator pan with guard, drip pan and sanitary perch. Water level is controlled by a float valve on pressure water system.

TIME for WATER WARMERS

By WALLACE GEORGE

NOVEMBER starts the frosty season. If you live in a place where winters are cold, you will soon be breaking ice off the stock tanks and poultry fountains, or doing something to prevent it from forming.

Everyone knows the physical discomfort and disadvantages of having to carry hot water or break ice to permit the livestock to drink. We can only guess the physical reactions of the livestock, but we do know that while we enjoy a glass of ice water under a shade tree in the summer time, we would drink little of it under the same tree on a cold winter day. The reactions we can measure are in the egg basket and the milk pail. Eggs are 65 per cent water and milk 87 per cent. Observations which are pretty reliable indicate that hens supplied with water held at a temperature of about 50° day and night will lay around a dozen more eggs during the winter than a hen supplied with water which drops to freezing or may have an occasional covering of ice. The desirable water temperature for cows is less certain, but the constant availability of drinkable water in locations protected from the weather has resulted in increases or the preventing of decreases of about 10 per cent in milkflow.



Cross section of Puget Sound Watering Trough.

Several companies sell reliable, thermostatically controlled poultry water warmers at prices from $3 to $4. The temperature control arrangement is built into the heater so that it automatically maintains a water temperature of approximately 50°. The wattage of these heaters is around 130, which is ample for most poultry water containers, but because of the automatic control, consumes a relatively small amount of electricity. Cornell University reports 2½ kwhrs per week for 10 winter weeks. Other compact heaters without thermostatic control are also available, as well as a number of pan type heaters for fountains.

Poultry Water Troughs

At a meeting of rural electrification men last winter, Mr. Wilbur Travis of the Puget Sound Power & Light Co. told of a poultry watering trough recommended by his company that has merit. This trough which is made of wood may be built on the farm or as a shop exercise for Smith-Hughes classes. Seventy-two of them were in use in Snohomish County, Wash., last winter.

The trough is made of 1 inch boards and is 6 ft. long and 3½ in. wide by 4½ in. deep inside. In one end is laid a standard, small 135-watt thermo-

statically controlled electric poultry water warmer. Over this warmer, where it will be sure not to freeze, is placed a float valve to control the

An easy and convenient method H. W. Fitting, a poultryman living near Lafayette, Indiana, found to prevent the freezing up of water pipes in his poultry house. An old stove pipe is set over the water pipe and a 25-watt light bulb is hung inside this pipe. There is a water warmer in the drinking fountain.

depth of water in the trough. Supported on two metal hangers made of strap iron are two wattle protection boards ⅜ x 2 inches, as shown in the sketch. These boards extend to the end of the trough and are to keep the bird's wattles from hanging in the water while they drink, and to wipe off any wattle-drip when they finish. This helps prevent wet litter. The hens drink from the space between the wattle boards.

With a depth of water of 4 in., the heater in one end will keep the water at a reasonably uniform temperature the full length of the trough. The trough, with perches on either side, provides 11 ft. of drinking space, which is enough for 250 hens. It is easy to construct, low in cost, and the wood radiates less heat than metal.

For those who do not like wooden troughs because of sanitation or possible leaks, a combination galvanized ice-pan with guard and drip-pan may be used. Such an arrangement is shown in one of the illustrations.

Stock Tank Heaters

Two companies make heaters which may be placed in ordinary stock water tanks. The heating element is near the bottom of the tank with a vertical stem carrying the wires up above the water surface. One of these heaters made especially for stock tanks contains a thermostat for cutting off the current when the water reaches a predetermined temperature. Most other arrangements which have been used have been improvised on the farm.

Electricity is undoubtedly the most care-free and satisfactory method of tempering drinking water for stock, but the cost of current may run up excessively unless certain precautions are taken to keep it down.

In cold climates one should not attempt to heat a large outside tank of water. It is best for cows and bank accounts to do the watering indoors or at least in a place protected from the weather. If you must use a large tank, the heated area may be confined somewhat by placing a keg or barrel around the heater and an inch or two off the tank floor. The barrel should extend to the water surface. Small tanks with float controls and a running water system would, of course, be more economical to heat than large ones.

While I have no data on the subject, it would seem to me to be worth some thought to compare the cost of heating water with that of providing a continuous flow of running water by electric pumping. A special water tank or trough 12 inches wide, 6 feet long and containing an 8-inch depth of water would hold 30 gallons. With an inlet at one end and overflow at the other, an ordinary 250 gallon pump (small size) running half time would provide four changes per hour which should keep the water from freezing, and might hold it at 40°. The current consumption would be about ¼ kwhr per hour. Some provision would have to be made, of course, for the overflow.

One method of using a warmer in a drinking fountain.

Tune Your Fiddle

The U. S. Bureau of Standards is now almost continuously on the air over radio station WWV, Beltsville, Md. (five megacycles) with the musical tone of A above middle C. It will enable everyone throughout the United States to have their musical instruments tuned identically.

"A handful of nubbins, a wisp of hay,
Is all you're going to get today,"
Jim Tightwad said to his brindle cow;
"You're a mighty poor milker anyhow."
"All right," said the cow, "I can do it too;
Just pump out that pint, and then you're through."

JOSEPHINE L. BAKER, Midlothian, Texas.

Left: (Figure A) The dining room is a good place to study—but not this one. The light is glaring—almost blinding—and will cause eyestrain and headache. Right: (Figure B) Here is the same dining room lighted for better sight. This fixture eliminates glare and provides light for comfortable reading and studying.

NEEDED!...
A Big Table and a Good Light

By MYRTLE FAHSBENDER

YOU have a big table in your home—maybe the kitchen table—perhaps the dining room table and it is here the children spread their books and papers in the evening to study. Not only the children but Mother may sew, or Dad read the evening paper. Gathered at this large table are many eyes that need good, adequate light.

Miss Fahsbender is Home Lighting Specialist, Westinghouse Lamp Division, Bloomfield, New Jersey.

Do you have good light? You can answer this question by checking your lighting against these four rules for better seeing:

Check Dimness. Do you find your eyes straining, squinting to see?

Check Glare. Are there glaring unshaded bulbs in your fixture?

Check Spotty Light. Is the room dark except the bright spot of light on your book?

Check Shadow. Do you work in annoying shadows?

If your answer is "Yes" to any of these four rules, some correction should be made.

In figure A there is dimness because four 25 watt amber bulbs do not provide adequate seeing light; there is glare because the bulbs are unshaded; there is spotty lighting, darkness in the corners of the room and bright spots of light on the books; and there are shadows. Notice the shadow of the fixture on the ceiling and the shadow of the table lamp against the wall.

The type fixture shown in Figure B is ideal over a table used for studying, whether it be in the dining room, living room or kitchen. There is no dimness because adequate reading light is provided by a three-light lamp bulb. This bulb makes it possible by turning a switch at the base of the fixture to have 100 watts for eating, and 200 or 300 watts for reading and sewing. There is no glare because the lamp bulb is enclosed in a glass reflector and provides soft, diffused light on the table top. There is no spotty light because a portion of the light is directed upward to the ceiling from where it is reflected throughout the room. This means eye comfort since there is no harmful difference between the light on the study page and the light in

Figure C. No frowning or straining of young eyes when brother and sister have good lighting like this from a certified I. E. S. study lamp.

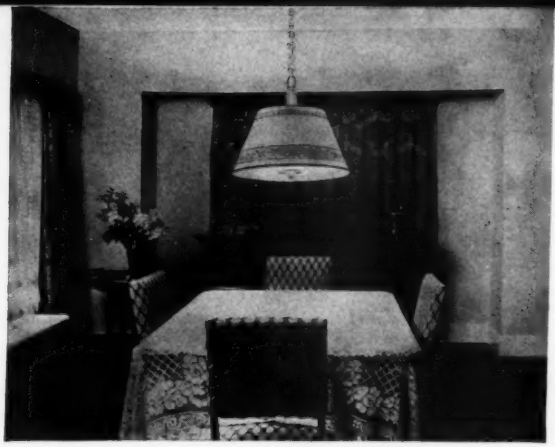


Figure D. For $3.95 this attractive adapter fixture can be installed in your home as easily as screwing a lamp bulb in a socket.

the rest of the room. And finally, there are no annoying shadows because the distribution of light is both upward and downward, reducing harmful shadows.

The table lamp (Figure B) is designed with a reflector to meet the requirements of the Illuminating Engineering Society. Where the ceiling fixture is inadequate and the budget cannot "budge" enough for a new fixture, an I. E. S. student lamp may be placed on the large table for study, as shown in Figure C. This lamp was especially designed to produce adequate light over a large top desk or table. It is, therefore, the perfect lamp for study or reading, so eyes —young and old—need not struggle to see.

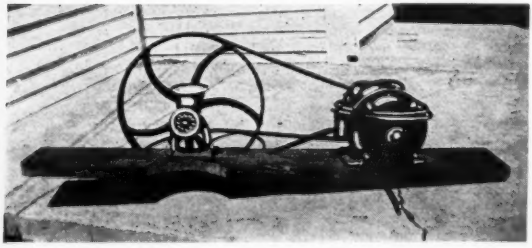
Another suggestion that will meet the budget and provide better lighting is the installation of an adapter or modernizer as shown in Figure D. This adapter is also designed with a reflector for use with a 150 watt Mazda lamp bulb. The shade is parchment—inexpensive and easily kept clean. To use this fixture, no additional wiring is necessary, only a single socket at the end of a pipe or chain into which the adapter is screwed.

Good lighting is not expensive but eyesight is priceless. No matter how much you would be willing to pay, you could not buy a new pair of eyes. Save and protect the only eyes you will ever have by studying, reading and sewing by adequate, glareless light.

—the proud I am a farmer—

Pleasant Grinding at Butchering Time

HERE is the sausage grinder used by Ed. Opdenhoff since 1935, on his farm in Oklahoma. It consists of a hand grinder fastened to a 2 in. x 10 in. plank, 4 feet long, with a hand clamp and a band of sheet metal fastened over the grinder and



screwed to the plank. On his particular grinder an extension is brazed on the shaft. This is not always necessary. The grinder pulley is 18 inches in diameter and the pulley on the ½ horsepower motor is 2½ inches in diameter, which gives a speed of about 240 revolutions per minute. This is about four times as fast as is normally turned by hand. Mr. Opdenhoff says he lubricates the grinder with vaseline or other tasteless oil and he never runs it empty.

The circular notch cut in the board permits the sausage to drop free or a pan to be set close to the grinder. In use it is convenient to place the board between two chairs or two tables. This makes the grinder easy to feed and the sausage can drop into a tub below.

Mr. Opdenhoff states "at 240 revolutions I grind 12 to 16 pounds per minute. To get a large capacity the meat should be cut in long strips instead of chunks. This makes feeding easier and faster and there is no danger of stuffing in your finger. We grind all our lard scraps with 3-8 inch plate, which greatly reduces the rendering time, and there are hardly any cracklings.

"This grinder makes butchering time a pleasure when there are tubs and buckets of sausage to grind, especially if there is much beef in it. It is also used to grind the apples in making our mince meat. I have used this grinder since 1935, and it is still going strong."

S.S. America

This de luxe $16,000,000 passenger liner America, which will make her maiden voyage across the Atlantic next spring, will have electric cooking equipment throughout its galleys and bake shops.

What Do You Mean "VENTILATE?"

Barn "Ventilation" Really Is Air Conditioning. We Build Barns to Condition the Air Around the Cows. The Electric System Is Positive and May Be Cheaper Than a Gravity System.

By H. N. STAPLETON

Mr. Stapleton is Agricultural Engineer, Green Mountain Power Corp., Burlington, Vt.

MOST of the confusion that breaks out whenever anyone starts to discuss farm building "ventilation" is caused by the fact that every person within shouting distance has his own definition for the word "ventilation."

As specialization in production of farm products has increased, more attention is being paid to the control of heat, moisture, and air movement in structures for housing animals as well as in buildings for processing crops. It might be just as well then, if we quit calling this thing "ventilation" and say "air-conditioning," which is exactly what we mean, and is what we are trying to accomplish.

Electric ventilating fan in the dairy barn of Massey Brothers, Jerseyville, Illinois.

Since each application is a different problem, and each user has a different idea as to the price he should pay and sets a different valuation on the results, these differences should be admitted as well. Predetermined results can be obtained from given conditions only by a system which gives positive control; and of the known systems of "ventilation," the electric method is the only one which allows positive control under all weather conditions. If you are looking for the most for your money in good air conditioning, the electric method provides it.

Do You Need to Do Anything About Ventilation?

In an open shed or building, the wind whistles through and there isn't much that can be done to control the air movement. When you feel it necessary to close up that building to keep it warmer, you run smack into a *need* for air change and humidity control. Whether it is profitable to do anything about it is another question.

The conditions which develop in a closed-up stock-barn are best shown by taking a dairy stable as an example. The arithmetic is pretty simple. Each cow breathes out 11 to 18 pounds of moisture every 24 hours. This adds up for 16 to 22 cows to one barrel, or not quite 1/16 inch of water over the entire stable floor each day. A cow giving less than 5,000 pounds of milk a year easily breathes out more water than she gives milk. This deficit in milk production may be the real reason why there is not more good dairy stable ventilation.

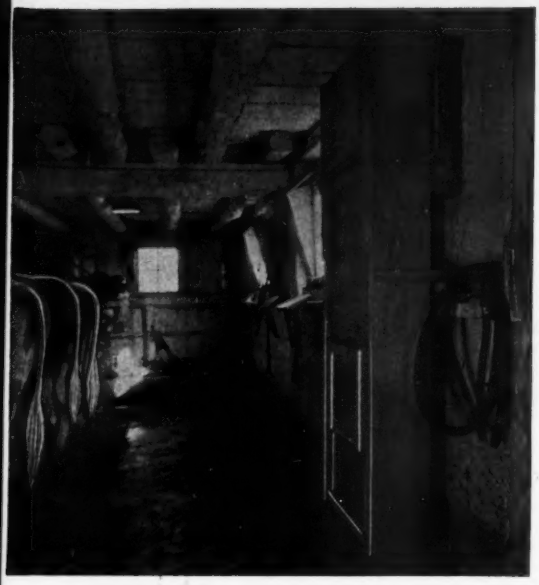
Stable air, free from carbon dioxide and odors, is usually admitted to be desirable in producing market milk. It takes approximately 60 cubic feet of air per cow per minute to keep the carbon dioxide concentration down to 15 parts in 10,000, which would be good fresh air in the ordinary size stable.

The heat to maintain a 45° to 55° stable temperature, which both research and farm experience show to be most desirable for best milk production, can be provided by the cows. Each cow as a heat producer gives off about 3,000 Btu. (heat units) per hour. While this is equivalent to 12½ square feet of steam radiators at 240 Btu. per sq. ft., you can't open the draft and poke up the fire during a cold spell.

The moisture, foul air and odors, you will agree, indicate that something should be done about the air condition in the dairy stable. The quantity of heat available will let us change the air and get rid of the moisture. We can, and need to do something, but how much may be another matter.

Can You Afford to Ventilate?

As soon as you try to do anything about the condition of the air in a dairy stable it most surely is going to cost you money. You will probably have to insulate the walls to conserve the heat so that the stable temperature will be held at the desired level and will not be subjected to abrupt



This outtake flue, opening near the floor and provided with two-speed electric fan, is in the John Miller barn in Michigan

changes. You may even have to storm-sash the windows if the winters are extremely cold. Intakes for fresh air will have to be provided and some sort of an outtake system put in. If you depend on natural draft, a well-insulated outtake flue will have to be built through the hay mow to the roof and capped with a cupola; or with electricity, you will have to install fans of adequate capacity and let them run. Anything you try to do in the way of ventilating is bound to cost you money. But, turn it around.

Can You Afford Not to Ventilate?

If the comfort of dairy cows doesn't mean more milk in the pail, why put them in the barn at all? Stabling apparently allows us to produce more milk with the same or less feed in the winter time, so we do it for dollars and cents reasons. We provide water bowls to get more milk from the same feed. Dairymen must believe in ventilation, judging from the number of years they have attempted to do something about the air condition in order that animal comfort and health as well as sanitary conditions might be improved and maintained.

The structural parts of the barn will stay in better condition if they are not subjected to an annual drenching. The paint will not be peeled off by moisture working through from the inside. Timbers will be drier and less subject to rotting. A ventilation system that works will pump that barrel of water a day from your 16 to 22 cows out of the stable so that it can't go up into the hay mow, nor run down the stable walls. Most dairymen make a stab at ventilation for dollars and cents reasons. What they get depends on whether the system they install works.

The Electric Method

With any ventilation system, the stable walls must be insulated enough to permit the animal heat to warm the building. The insulation must also keep the wall itself warm enough so that it does not "sweat." Intakes should be spaced along the walls so that a reasonably uniform distribution of incoming air will be provided. Drawing the air in is up to the outtake system.

When fans are used as the outtake system they must run continuously, for if they do not run, there is no ventilation. Some control, preferably fans with two-speeds, is desirable if the stable is not to be cooled too much in extremely cold weather. If the fan capacity provided is based on 60 cubic feet of air per cow per minute, the two-speed control is very satisfactory and may be accomplished either by manual switching or by a change-speed thermostat. The on-off thermostat with intermittent fan operation invites trouble.

What You Get

With the electric method, air change and humidity control are not dependent on whether the wind is blowing and how hard. Whatever condition is prescribed can be maintained with reasonable accuracy. The installation cost of the fan plus 10 to 15 years' operating cost, on present electric rates, is little, if any, greater than the initial cost of a flue system that can produce comparable results under favorable conditions. You have the use of the money meanwhile.

With the electric method, 1 kwhr moves 1 million to 1½ million cubic feet of air, dependably and under your control. Wiring is not a serious problem, as the largest fan motor will be ⅓ hp, or a little less than 175 watts. If quality equipment is selected the proper type motor for the job will be provided. It should of course be designed for continuous operation, and if it has ball-bearings with the lubricant sealed in, it should require very infrequent attention.

Farmers using the electric method properly installed appreciate what good dairy stable "ventilation" can be. The stable is dry, and smells clean. The water supply pipes to the water bowls don't even sweat. Four to eight pounds of milk a month pays each cow's part of the operating cost of the fans; and if just one cow should become a TB reactor, the price of the fans that could have provided a dry stable with fresh air, has been lost.

If you can't afford not to "ventilate," there is the very good possibility that the electric method will do the best job for you, with its dependable control and low cost.

MR. J. D. TURRELL of Attica, N. Y., writes: Separate meter readings gave current consumption for four weeks' brooding of 200 chicks at 38 kwhr. The period covered was from July 18 to August 18. Started another 200 on September 1.

Hides from Danish cattle have shown as high as 90 percent scratches and cuts from barbed wire, so the Danish farmers are experimenting with electric fences.

Up in Massachusetts, a factory is being built without windows. It will be lighted artificially with over 1,400 lamps.

HOW TO FIT A RIP SAW

By L. M. ROEHL

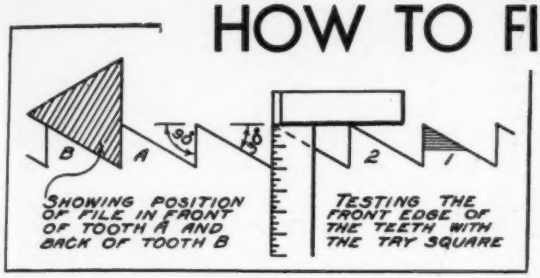


Fig. 1. Shape of teeth and position of file for a rip saw.

FIRST clean the rust off the saw by rubbing it with a piece of pumice stone under a small stream of water. Pumice will not scratch the steel as will emery or sandpaper. Next joint the saw, i.e., file all teeth to the same level with a flat mill file resting lengthwise on the teeth and at right angles to them.

The procedure after it is jointed depends partly on the shape of teeth due to jointing and previous faulty filing. Rip saws most commonly used have five and a half or six teeth to the inch for which a six-inch slim taper file is well suited. The teeth are shaped as shown in Fig. 1. The fronts of the teeth are at right angles to the edge as shown by the try square. The backs of the teeth are at 30°.

Fig. 2. How to hold the file.

When filing, one side of the triangular file is held plumb, as shown at B, Fig. 1. The file is held in both hands, as shown in Fig. 2, and the stroke made straight across the saw. The handle end of the file is held a few degrees below the level or horizontal, thus preventing the screeching due to vibration. It will be noted in the picture that the tip of the file is held between the thumb and index finger of the left hand for merely guiding the file.

Every other tooth is filed from one side. The file is held on the back of the tooth that is set away from the filer and against the front of the adjoining tooth. The front of one tooth and the back of the next are filed with the same stroke. Do not file in one place until both teeth are to a point. File only enough so that when the next tooth is filed from the other side the teeth will be equal in size and shape. It is good practice to test the position of the file frequently as shown in Fig. 3. For the beginner it is also good practice to file an inch or two from one side and then turn the saw around and file the adjoining teeth from the other side. The point being to determine if the proper amount of filing is done from the first side. One must be particularly careful to stop filing when the tooth has been brought to a point on the second side as an extra stroke after the point has been reached files the point down and out of line of service.

The shaded part of tooth No. 1 in Fig. 1 shows that only about half of the tooth is set and the set at hand must be regulated to accomplish this result. If the saw makes a kerf in the wood that is too wide and the edges of which are ragged, the saw may be side dressed by laying the saw flat on a bench and drawing a fine oilstone lightly lengthwise of the saw on each side.

Fig. 3. Test frequently to keep teeth vertical.

What Does RUNNING WATER Bring?

Running Water brings us health
And other things worth more than wealth.
Without it we would thirst and smell,
Our homes might burn or wouldn't sell.

It irrigates sweet peas and roses,
Washes necks and ears and noses;
At the movies cools the air
For the lovesick, spooning pair.

Running Water puts out fires,
Sprinkles the lawn and never tires;
Bathes the babe, his pants and gown;
Makes insurance rates go down—

Flushes toilets, fills the tub
For dirty clothes, aye, there's the rub;
Wets our whistles, keeps us clean,
Makes the vegetables green.

These things Running Water brings
Alike to common men and kings;
And so from birth clear to the end
Running Water is man's best friend.

—From Ford Meter Box Co., Wabash, Ind.

Electrical HOUSEKEEPING

Conducted by GAIL MEREDITH

My Sewing Machine Earns Money for Me

HERE are four letters I'd like to have you read. The women who wrote them set out to tell straightforward tales of the savings they make by sewing at home. A simple thing. You'll like to know what those savings are, I'm sure. But I wouldn't have you read the letters just for that.

You do not have to have a knack with a needle yourself to get a thrill at thinking of Dorothy starting out to college with her little trunk packed with clothes—right clothes, nice clothes, successful clothes—clothes she made herself. You know they will be that because Dorothy has been studying clothes for herself and her entertaining family for—"oh, for years," she says loftily, being seventeen.

"We live on a farm," she writes, "and I have three brothers and two tomboy sisters younger than myself. We also have barbed wire fences and a pony and several nice climbing trees. The money saved or earned by mending their clothes on the sewing machine amounts to a lot.

"My mother has a hard to fit figure, forty above the waist and forty-four below. She can't buy dresses to fit both halves, so the machine saves dress maker bills.

"One of my sisters is in high school and we can make her dresses cheaply. She used to split her dresses down the back and rip out the sleeves. An action pleat down the back stopped that. Sturdy seams we sew on the machine keep stitched better than the best "store" dresses.

"The eight-year-old tomboy has to wear dresses to school and for dress. The ones she likes are usually too expensive ready made, so Mom makes them with a foundation pattern, and is she good at that! The skirts must be full enough so they do not show her knees when she's on the pony—such modesty — and that is easily done, too. With deep hems, she doesn't outgrow them so rapidly. The scraps make patches that match.

"I am entering college this fall, and of course, I want nice clothes. Making them is the only way I can get almost everything I want and pay the entrance fees, too. I can make just what I want and know that it is sanforized, washable, and well made.

"Besides clothing there are the curtains and the sheets. Mom has even made seat covers for the car, and slip covers for chairs and the davenport. One of the boys said the other day, 'Gee Mom, you can make almost anything on the machine. It sure saves a lot of money, doesn't it?' Mom, stitching a side seam on a new dress, agreed."

If you sometimes get a little confused looking at lip stick and doll hats and short skirts, and wonder as you push through the Saturday night crowds, what can be going on in the minds under those hats, just stop a minute and get a picture of this new home that is starting out on a sound, intelligent basis. I have no idea what kind of hats Mrs. Mies wears, but I admire the clear-headed way she budgets her finances, and I like the love and forethought she puts into taking care of that new husband of hers.

It is all here between the lines. Read it and see.

"My sewing machine earns me money. My home accounts prove the fact. I bought a portable machine in October, 1937, when I was teaching. By paying approximately $15 a month I had it completely paid for by May. I expect to use it at least 25 years, distributing the total cost over a quarter of a century reduces the yearly cost to $4. In the past two years I have saved $71.69 by doing my own sewing. Deducting $4 a year leaves me over $30 annually in clear profit. The figures on the opposite page prove my earnings.

Times have changed since my grandmother made all my grandfather's work clothes. Nevertheless, my husband benefits by our having a sewing machine as much as did grandfather. Running a corn husker can be dangerous, and we feel that if he should get caught he has a greater chance of escaping without severe injuries if he is wearing old coveralls since these

The lady likes to sew.

would tear more readily than those of new material, thereby releasing him from the husker. Every night after supper I inspect his coveralls for any tears, lose pockets, or frayed seams. Either then or the next morning while he is doing the chores, I clip off all frayed edges, put a piece of material under the tear, and stitch back and forth repeatedly over the fresh trimmed edges. This makes a very durable patch. Then I restitch any loose pockets or seams. When Clarence zips on his coveralls, there are no loose ends to catch in the machinery. Of course, he has an accident policy, but we use every precaution to insure safety."

Mrs. George R. Pigott and the 40-cent suit.

Whether you have a family or not, you'll chuckle with Mrs. Pigott about the tweed dress that was cut down for a coat for Russel, bequeathed to Ritchie and laid over for John, too young for top coats at present.

And, mark my words, your husband will be sure to break out in a long whistle of admiration if you show him this picture of Mrs. Pigott and the forty-cent dress.

There is thrift and resourcefulness and love and fun, all bubbling up through this casual letter about the things that happen on the Pigott sewing machine. If you like to know other folks, here is a grand chance to get acquainted.

"Whether it's new suits, with delicate hem-

Mrs. Mies Proves Her Earnings

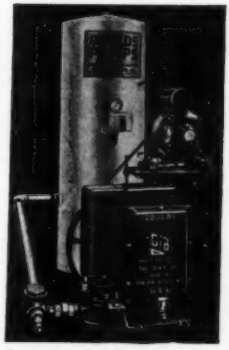
Article	Cost Materials	Cost Ready Made
Wool coat and skirt	$20.76	$39.95
Blouse	1.29	2.98
Print blouse	.25	1.50
Tailored silk dress	8.08	15.95
Wedding dress	4.52	10.95
Satin slip	2.60	4.98
Tulle veil	3.09	5.15
New lining for winter coat	1.17	4.00
Fall dress	5.17	9.95
2 house dresses	1.26	3.15
Navy sheer dress	4.10	6.95
Navy rayon slip	1.81	2.50
Powderpuff muslin dress	1.47	2.95
Cotton house dress	.88	1.98
2 sport dresses	1.49	3.96
Tweed fall jacket	2.90	5.95
3 pr. lined cotton draperies	6.04	10.50
3 pr. tailored panels	1.24	2.70
2 pr. kitchen curtains	.82	1.50
3 pr. sun porch curtains	2.94	5.25
Couch cover for porch	1.60	1.98
Dimity dressing table skirt	.31	.70
	$73.79	$145.48

stitched ruffles for our seventeen months old twins, a heavy leather jacket needing a new zipper, an old horse blanket to be mended, a new slip cover for the davenport, or appliqued curtains for the bathroom, it makes little difference to my sewing ma-

Plenty of water

Water! Think what it means to the health, cleanliness, convenience and pleasure in the home. Then consider its value for stock, crops and fire protection. Plenty of water is also essential—and with a Goulds CID Water Supply System you are all set for ample capacity.

Goulds CID Water Supply System for Deep Wells.



A GOULDS SYSTEM for deep or shallow wells will give you a maximum supply per dollar invested with utmost freedom from need for servicing over a long term of years.

See your nearest dealer—he can show you the complete line of quality built, thoroughly proved and dependable Goulds CID Water Systems.

GOULDS PUMPS, Inc., 340 Fall St., Seneca Falls, N. Y.

GOULDS RUNNING WATER

8939

November Contest

Perhaps you have it, and perhaps you haven't. Whether you do or you don't, I'm sure you know a dozen good reasons why you would like to have running water in your kitchen.

That is the subject of our contest letter this month. "Why I want running water in my kitchen."

We will pay five dollars for the winning letter, and a dollar to the writer of any other letters we may use later.

The contest closes November 20.

Send your letters to Gail Meredith, Madison, Wisconsin. General Delivery.

chine for it takes care of things like this almost every day of the week.

"To me," Mrs. Pigott goes on, "there is a great deal of satisfaction in the creation of clothing, whether from a piece of new material or old. When in high school I made a tweed dress which I wore several years, later making it into a coat for Russell, our oldest child. He wore it for two years before Richie inherited it. After his wearing it for three years, it has been laid away, still in good condition, for John, one of the twins.

"Ann has a winter coat and hat made from a coat of mine. The attachments on my machine, which was new this last winter, have wonderful accomplishments. There's the hemstitcher that also does pecoting, the pinker for seam finishes, the cording foot for sewing in zippers and making cording, and the zigzagger which does appliqueing and makes decorative trimming stitches.

"In our bathroom we have curtains made from 1½ yards of 8c cheese cloth, trimmed with appliqued tulips done with the zigzagger. No turning under the edges, just zigzag the patches on and trim the edges afterwards. This cheese cloth holds its shape after washing.

"Then another way my machine works for me is to make something out of nothing, or practically nothing. This spring when corn planting was over, I sent our Hybrid seed corn sacks to the laundry and had them bleached for 2c a sack. They are heavy crash and bleach perfectly white. From six of these sacks I made myself a white suit. It has proved very serviceable all summer. The total cost, including pattern, zipper, bleaching and thread was only 40c.

"Now I have just finished making a slip cover for an upholstered chair. I used more of these sacks and dyed the finished article. From the sound of this letter you might think we have all made-overs. No. My machine makes more new things than old. I do most of the sewing for our five children and myself. Whether from old or new my machine makes me money every day. I know that it saves us over half of our clothing bill. For the same amount of money expended, I can make more than twice as much as I can buy of the same quality and at the same time have it fit better."

But even if you never have had a needle in your hands, you will find a little spur to your ambition, a little prick to your pride in reading Mrs. McDonald's letter.

There's a woman for you!

"Dear editor," she begins. "My mother carried her spinning wheel across the plains in an old wagon. She did all the spinning and weaving for eight children's clothes. I was born in 1860 and was married at the age of fourteen. A sewing machine was a luxury we couldn't afford in our log cabin on the Willamette River. There were too many children and they came too fast, making plenty of sewing to be done. I used mother's spinning wheel and spun my own thread, then I tediously did my own weaving and did the sewing by hand mostly. We were too poor to buy material for eleven children's clothes.

"When I had time I walked 10 miles across animal and Indian country to another settler's cabin to use her sewing machine. It was a cumbersome thing and hard to run, but it was a real luxury then. I'd be so tired from running the machine all day that I could hardly drag myself home with my load of finished garments at night.

"I became quite a proficient seamstress, and I started making clothes for richer families than my own. After three years' work I sewed and saved enough to pay for a machine of my own. I've forgotten what kind it was but it was the pride of the family then. It held the honored place in our living room for years and paid for itself in cash several times over.

"The most interesting job I did on it was the wedding dress of an Indian girl. She saw the bridal outfit I had made for a rich man's daughter, all white satin and lace, and when she saw it she said she wanted one like it. When I asked her what material she had for her dress, she shrugged. Half an hour later she was at the door with some coarse gray material, like gunny sacking. I accepted the material and made the dress with the pattern I had used on the satin one. I also added scraps of lace left over from the satin one. But it was a job! The Indian girl was delighted with her finished gown, coarse though it was, and was happily married in it. And I was invited to the wedding. I got some smoked fish for my sewing. But that dress taught me something. When I can't sell my work for cash, I trade it for something I can use.

"In 1920 I bought a foot power machine. It paid for itself, too, but my real buy came this year. I saw an electric machine advertised in ELECTRICITY ON THE FARM and bought one.

"Yes, I am 79 and will be 80 soon, but I don't feel it when I'm sewing on my new electric. I can see to thread it, and I'm proud of the work I do on it. I make all kinds of things for my children and grandchildren and for myself. So my sewing machine earns me money by saving my sight, adding beauty to my home, giving me new, chic clothes at half price, and gives me an income at eighty that keeps me off relief, pensions and relatives. It keeps me busy and up with the modern world.

"I do not want to be a behind the times old fogy, and I couldn't be and keep up with the styles I sew on my electric machine. My electric sewing machine earns me money to keep modern."

And at the end of her letter, way down at the bottom of the last page, this gallant, ambitious little person added a postscript that said:

"I typed this letter myself on my granddaughter's typewriter. I made her a blouse on my machine to pay for it."

The winner of our August contest was Mrs. Elizabeth McDonald, Vernonia, Oregon. But they are all "winners"; don't you agree?

Hair Drier Saves Goslings

"We are glad in many ways that we have electricity on our farm.

"I thought you might be interested in an incident that happened this spring. A sudden shower caught our baby goslings outdoors. The poor, drenched things were shivering with cold and helplessness when we carried them in. We thought of various ways of warming and drying them, but suddenly a thought came to my mind.

"Why not use my little electric hair dryer on them. It would *blow* warm air on them gently, not be too hot, and fluff their down.

"I tried it and in just a few minutes they looked as if nothing had happened. About two weeks later, we had a cloudburst. It came all of a sudden, with lightning, thunder and force of wind like I had never seen in my thirteen years in Michigan. As soon as he dared to go out, my husband gathered up the goslings. There were seven of them. All looked as if they were dead except two that showed some signs of life. Out came my hair dryer again. I trained it mostly on the two that moved a little and found immediate heartening response. They perked right up. Soon I noticed an occasional squirm in four others and played the dryer on them more vigorously. The seventh one was dead, so I put it aside. In less time than you can imagine six smart alecky goslings were running over my kitchen floor and had to be put in a place more becoming to geese. All were fluffy and dry and cute as ever. Of course, this was a small number of birds, but the results were so gratifying in such a short time that I'm sure a larger number could have easily been taken care of. One really should have seen how sopping wet, limp and hopelessly dead they looked at the beginning to appreciate the above."

MRS. WM. C. ROOSSINCK.
Reeman, Mich.

ELECTRICITY HELPED ME
EARN THIS MONEY

Cleaning Seed

When I installed electricity in my barn, I did not think of it as a thing with which to earn money but as something that would save labor, prevent my stumbling around and bumping my head in the dark, and relieving me of the anxiety of fire by a lantern.

But one morning my neighbor brought his seed to be cleaned in my fanning mill, which I had equipped with a small electric motor. When we finished, that afternoon, he asked, "How much?" I replied, "Well, the 'juice' would cost about a dime, your politics are not bad, so I guess it is worth a 'Thank you'." Whereupon he replied, "That seed would have cost me fifty dollars at the seed house." Thrusting seven dollars into my pocket, he exclaimed, "Buy a hat!"

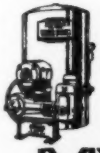
ARTHUR BARRETT,
R. No. 4, Box 316,
Springfield, Mo.

Contest Letter

MOTHER LOOKS YEARS YOUNGER...

Since we got our MYERS

COUNTLESS daily problems of housekeeping and sanitation are simplified and made easier by a reliable MYERS Water System. And out in the barnyard, where farm income is earned, the same adequate source of water supply at the turn of a faucet becomes a real means of profit. Thousands of farmers have learned that they can absolutely depend on their precision built MYERS for *adequate capacity* as well as for lifelong durability and economy. Remember that the MYERS line is the most complete of its kind in the world. You are sure to find in it a water system that exactly fits your needs. Deep and shallow well models, for operation by electricity, gasoline engine, windmill, or hand power. Write today for interesting free booklet.



There's a MYERS dealer near you. Ask him about the new electrically operated MYERS *Ejecto* Water Systems, the simplest, quietest, most troubleproof water systems ever designed. For wells up to 120 feet deep. Only one moving part in pump.

RUNNING WATER
YOUR FAMILY DESERVES IT

MYERS
WATER SYSTEMS

THE F. E. MYERS & BRO. CO.
1131 Orange St., Ashland, Ohio

"Pump Builders Since 1870"

Send, free, Water System Booklet and name of your nearest dealer.

Name.....

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WS 9-18

Take Off Your Hat to the MYERS

Announcing

The New

DE LAVAL MAGNETIC *SPEEDWAY*

MILKER

Tomorrow's Milker *Today*

THE new De Laval Magnetic Speedway Milker is here now. It's new, yet based upon tried and proven De Laval principles of milking—it's far out ahead, unequaled by any other method of milking—it's the world's best and fastest milker.

New, exclusive features enable the time-tested De Laval principles of milking to be applied still more effectively—magnetic pulsation control, uniform, rhythmic, vigorous milking action . . . new tough, long-lasting Delatex rubber parts . . . new Stainless Steel Comfort Teat-Cups with easy-to-clean, Sani-Cap combination teat-cup bottoms and milk tubes . . . new Fast Flow, one moving part—pulsator which never requires oiling . . . new polished, silvery, one-piece, durable, sanitary Stainless Steel Pail . . . new improved operating top with removable sight glass . . . these are just a few of the many exclusive features of this wonderful new milker.

Whether you now milk by hand or by machine you have a real surprise in store for you when you first see the streamlined black and silver, easy-to-care-for beauty of the new De Laval Magnetic Speedway Milker.

Your local De Laval Dealer will gladly demonstrate the new De Laval Magnetic Speedway Milker without cost or obligation. Get in touch with him today—or send coupon to nearest office listed below.

THE DE LAVAL SEPARATOR CO., Dept. 18
New York, 165 Broadway
Chicago, 427 Randolph St.
San Francisco, 61 Beale St.

Please send me, without obligation, full information on { Milker ☐ Separator ☐ check which

Name .....

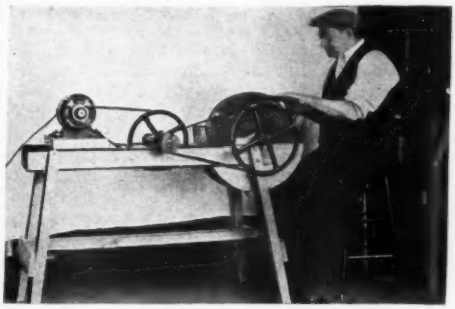
Town .....

State.....R. F. D.....No. Cows.....

Modernizing The Old Grindstone

No grinding device yet known can entirely compete with the old, wet grindstone for sure, safe results. It not only does a nice job, but there is no danger of overheating the tool ground and drawing out the temper.

The modernized grindstone shown in the illustration is mounted on a rugged frame of two by fours, bolted together. A galvanized trough was built to fit the underside of the stone so that while running it is continually wet. The trough has a stopcock for draining so the stone will not become water-logged. The stone is turned by a quarter horse motor geared down to run a little less than sixty revolutions per minute.—WALT MESSENGER.



This stone will not take the temper from the tool ground.

"I'm sending it to my son at college; the horrid old football coach put him on the scrub team!"

ON THE AIR

Conducted by
JEROME J. HENRY

New Comic Series

FRESH from his success in a movie in Hollywood, Joe Penner recently launched a new series of NBC programs under the title "Tip Top Show." Assisting Penner is Dick Ryan as his man Friday.

Since his radio debut on Rudy Vallee's program back in 1933, Penner has enjoyed a rapid rise to fame. Scoring an immediate hit, Joe made several

Patsy Garrett, Jane Wilson, and Donna Dae, singers of the Waring troupe.

return appearances with Vallee and a few months later he was starred on his own network program. In 1934 Penner was voted America's outstanding radio artist in a nationwide listener's poll, the year he made his first feature length movie.

Penner was born in Hungary as Joseph Pinter and came to this country at the age of nine to settle with his parents in Detroit. After a varied career as newsboy, choir singer, factory worker and piano salesman, Penner accidentally broke into vaudeville as a mind reader's assistant when the regular performer failed to show up. Prior to his radio appearance Penner played in several New York performances.

• • •

MORE than 1,000 university professors were interviewed by Sherman Dryer, script writer of the Human Adventure radio program for subjects and material suitable for dramatization on the broadcasts. That gives one an idea of the amount of work that goes into a great many radio

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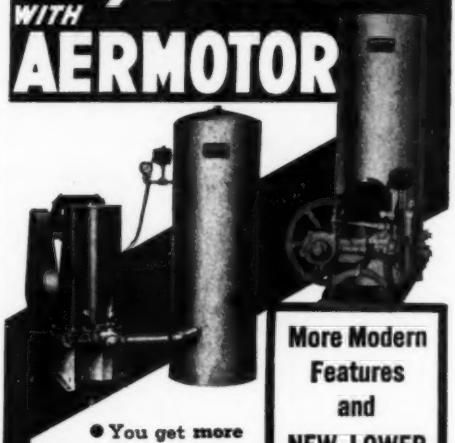

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● You get **more** for your money in an AERMOTOR Electric Water System. Prove this for yourself by an examination. You'll **see greater** value everywhere—numerous modern features and advantages. Look especially at these:

(1) U-BAR CONSTRUCTION. Generally accepted as the greatest pumping **improvement** in recent years. It keeps gear case closed and keeps out dirt and water. Insures **longer** life and **saves** costly repairs.

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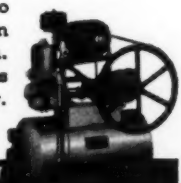

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A 250 gallon per hour Shallow Well Pump cushioned in rubber over a 30 gal. heavily galvanized tank completely assembled and shipped in one crate. All you can hear is the swish of the steady stream of water and the hum of the motor—our most popular Shallow Well System—lists at $62.00 complete.

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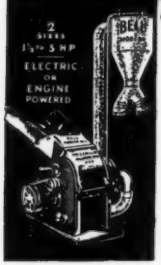

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DAZEY ELECTRIC CHURNS

programs. Dryer did most of his canvassing by airplane, flying from college to college. So far he has more than 100 episodes for future shows outlined. They include inside information on research in science, history, art, and other branches of knowledge.

• • •

Veteran at Eleven

AT the age of eleven, Sybil Trent, drum major of the March of Games program is already a veteran of stage and screen. Sybil made her debut on the screen singing in a movie short when she was three and a half.

She showed up to such advantage that Earl Carroll sent for her and gave her a singing spot in his Vanities of 1932.

All of her activities would not seem to leave much time for school, but Sybil attends a regular public school and is already in the seventh grade.

Sybil Trent, drum major of the radio "March of Games," finds it difficult to banish her engaging smile even when she knows the features of a miniature commander should be stony. Her radio work has been extensive including appearances with Kate Smith and Orson Wells.

• • •

Watch for That Call

YOU may receive $1,000 as a present. You may get it without writing a slogan, entering a contest, or learning art in your spare time. You may even get it without the death of a rich uncle.

This $1,000 gift, and it's a real gift with no strings attached, is a weekly feature of Horace Heidt's Tuesday evening program over NBC stations.

During the broadcast a telephone number is called. The call may arrive in any home in any city, town, or village, or farm from Maine to Miami, or from California to Connecticut. If the call is answered the person telephoned will be given $1,000. There are no ifs, ands, or buts.

If there is no one at home to take the call, the party who was called will be presented $100 and the balance of $900 will be added to the purse for the following week.

Perhaps the most versatile orchestral group in radio Heidt's band includes Bob Knight, electrical guitarist; Frankie Carl, pianist and composer of "Sunrise Serenade"; Henry Rusell, organ specialist; Bernie Mattison, swing drummer, and many other entertaining musicians.

QUESTIONS and ANSWERS

Size of Water Pipe

Question: *We are about to install an electric pump for a deep well. The drop pipe and cylinder will be 3 inches in diameter. What size pipe should be used from the pump to the 120 gal. pressure tank?* M. F. K., Ohio

Answer: One-inch pipe will do if close coupled; use 1¼-inch if longer than 25 feet.

Homemade Range Elements

Question: *Do you know of any way to make heating units at home, so that they can be put into a wood or coal burning stove? What size wire is required?* J. P., Ohio.

Answer: We have no plans for making electric ranges at home, but you may be able to get information on this subject by addressing the Department of Agricultural Engineering, Virginia Polytechnic Institute, Blacksburg, Va. They did some experimental work on the subject a few years ago.

Why don't you investigate the use of a heavy duty, 2 unit hot plate which may be placed on top of your fuel burning stove? If you want an inexpensive oven, the large electric roasters are proving very satisfactory on some farms. Most electrical dealers carry these in stock.

Ultra Violet Lamps for Hens

Question: *I should like to obtain a source of ultra violet rays better suited to my pocketbook and requirements than any I know of. Can you help me obtain the one I am looking for at an economical price?* R. L. A., Ill.

Answer: The most satisfactory source of ultra violet for poultry that I know of is the new S-4 lamp. It uses 125 watts and produces more ultra violet than the 400-watt S-1 lamp. These lamps are not available in units for use in poultry houses, but the separate parts may be purchased and assembled. Mr. L. C. Porter of the General Electric Company, Nela Park, Cleveland, Ohio, gives me the following cost prices: S-4 lamp, $9.50; en-

Pays You 3 for 1

Provide Your Hens with Water at 50° and Average an EXTRA Dozen Eggs per Bird This Winter. . . .

More Money - Less Work!

Speeds Up Laying like a Spring Thaw! More Eggs When Prices Are High Pay High Dividends on This Small Investment. Built for Durability and Long Service. Unfailing Water Supply in All Weathers Keeps Hens in Prime Condition and Production.

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THE MODERN *New* WAY TO IRON

It's quick, easy, fascinating—this remarkable *Armstrong* Way of Ironing! Whisks you through biggest ironings—sheets to shirts—in half the time. No tiresome standing up! No labor! You simply *guide* the clothes while comfortably seated—your ironer does all the work. Enjoy these advantages *every* ironing day, with a fully automatic Armstrong "Master".

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A post card will bring you an interesting booklet about this sensational appliance and tell you where you can see it demonstrated in your community. ARMSTRONG PRODUCTS CORP., 34 W. 7th Avenue, HUNTINGTON, W. VA.

DEALERS:

Thousands of Armstrong Ironers already sold. Complete, liberal sales plan includes mechanical self-demonstrator, free with initial order. Write, wire or phone today!

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THIS IS THE WAY TO PAINT YOUR HOUSE—BARNS—FENCES—EQUIPMENT—FURNITURE

With a Speedy Sprayer you or the boy can do just about *any* paint job 5 to 7 times faster, better, and at low cost. Electric models, $5.10 to $35.00—auto, truck and tractor models, $2.50 to $11.00, spray paint, enamel, varnish, lacquer, insecticides, disinfectants. Special chuck inflates tires. It's *fun* to paint this modern, easy way, and it saves you money, saves your time, saves your buildings and equipment. Send a postcard for complete information on Speedy Sprayers, or see your dealer.

DEALERS: Send for catalog, price list, discounts on Speedy electric and auto-power Sprayers.

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NEW COOLER, EASY RUNNING COW CLIPPER

World Famous **STEWART CLIPMASTER**

Over 90% of the world's clipper users own and PREFER STEWART clippers. New anti-friction tension control assures perfect tension between blades for cooler, lighter running--faster, easier clipping. Makes blades stay sharp longer. **The most powerful clipper of its kind ever made.** Lasts longer. Fan-cooled, ball bearing motor exclusive Stewart design. Completely insulated in the special **EASY-GRIP** handle barely 2 inches in diameter. The finest, most enduring clipper ever made for cows, horses, dogs, mules, etc. **A $25.00 value for only $19.95** complete. Slightly higher West of Denver. 100-120 volts. Special voltages slightly higher. At your dealer's or send $1.00. Pay balance on arrival. Send for FREE catalog of Stewart electric and hand-power Clipping and Shearing machines. Made and guaranteed by Chicago Flexible Shaft Company, 5524 Roosevelt Road, Chicago, Illinois. **50 years making Quality products.**

closed transformer, $7.00; socket, about $.90; wide-angle aluminum reflector, about $3.50. These lamps are new, and have not been used much on farms. In the one case where I have talked to farmer users, they were immensely pleased with results.

Radio Noise

Question: *The electric line which has been built in our territory is so noisy that we cannot use a radio.*

What I would like to know is if the power company has to fix the line so we can have the same radio performance as people in the city?

J. H., Wis.

Answer: I know of no requirement compelling power companies to eliminate radio noises. The trouble is as likely to be in some equipment you or your neighbors are using, such as an old type electric fence, as on the power lines. My suggestion is that you talk frankly with your power company representative.

Are Jet Pumps Satisfactory?

Question: *Why have jet pumps been in use on the Pacific Coast and not in the middle west? Are they quite as satisfactory as the cylinder type? Will they stand up as good as the other types?*

W. H. P., Wis.

Answer: I am at a loss to know why jet pumps have not been introduced in the middle west and East before this time. Engineers at the University of California report that they have given very satisfactory service in that territory. Eastern manufacturers report them to have become almost immediately popular in this territory. I see no reason why they should not be entirely satisfactory.

Should you install a jet pump, I would recommend spending a little extra for a good foot valve as this is the part of the pump which would be most likely to give you trouble; for lifts greater than 90 ft. cylinder type deep well pumps are more efficient than the jet pump. Because of the few moving and wearing parts, a jet pump should last longer than a cylinder type pump.

Pump Water 500 Ft. from Spring

Question: *I have a well in my cellar which threatens to dry up, and I have a never-failing spring about five hundred feet away which is just on a level with the house. Can I not lay two ½-inch lead pipes to that spring, use a jet pump arrangement and force a stream through one pipe from my Pneumatic Water System, and drive back a good stream through the other pipe and into the well in my cellar?*

F. L. G., Miss.

Answer: If your spring is on a level with your house, you will not need a jet for forcing water from the spring to the house. With a pipe line which is absolutely tight so it will not leak air, you can connect your present water system to your spring by means of a 1¼-in. or 1½-in. iron pipe line, and pump directly from the spring with this same water system. You should probably cover the pipe to keep it from freezing. Lay the pipe very carefully with a level, so you will have a gradual

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LOW-COST WATER HEATING with this PORTABLE ELECTRIC AUTOMATIC WATER HEATER

LOW FIRST COST OPERATING COST

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HEBRON, ILL.

slope to the house even though the drop is only a few inches. Connect the suction of your pump to the pipe line.

You can also keep your pump connected to your present well by placing a gate valve in each suction line and keeping the valve stem well packed so it will not leak air. Either source of supply can be used as you choose. I would recommend against lead pipe, as a line of that length might cause lead poisoning if the water stands in it.

Florida Fly Traps

Question: *Kindly advise me where I can get more definite instructions on how to construct fly traps used in Florida. There is a photo in your magazine on page* 14 *of the September* 1939 *issue.*
W. W. G., New Jersey.

Answer: J. H. Stafford, 1820 S. W. 13th St., Miami, Fla., is the agent for this equipment, known as the Ludlow Cattle Fly Controls.

How to Make a Water Softener

Question: *On page* 9 *of your September magazine Mr. E. R. Meacham tells about his home-made water softener using "Zeolites." Would appreciate receiving sufficient information to properly construct and maintan same. How much Zeolites and gravel; salt for regenerating, etc.*
F. R., Mo.

Answer: The Zeolite water softener described in our September issue was installed by Mr. Meacham but was not a home-made softening outfit. It was purchased complete, ready for installation. We are having several manufacturers of this equipment send you their literature.

Zeolites are of two kinds: natural green sands which when properly prepared will remove about 2,400 to 3,000 grains of hardness per cubic foot of sand before regenerating; and manufactured Zeolites, which have a capacity of 5,000 to 10,000 gains of hardness per cubic foot. The regeneration of this Zeolite sand calls for washing with a concentrated salt solution. About 3/10 to 5/10 of a pound of salt are required for regeneration per thousand grains of hardness removed. Enough gravel is placed in the bottom of the tank to prevent the Zeolite sand from being washed into the pipes.

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Now you can have PLENTY of water under pressure with Dayton De Luxe Water Systems—WHEN you require it. Dayton's exclusive Automatic Capacity Control increases capacity from 250 gallons per hour up to 310 gallons whenever increased supply is required. To get complete details, write your name and address on the margin and mail it to us now.

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$5.00 DOWN — 30 DAYS' TRIAL

Own this amazing VIKING RED TORNADO HAMMER MILL for the money you are paying now to have your feed ground. Its economical operation actually pays for the mill in a short time. Grinds wheat, corn, oats, barley, roughage, etc., when you want it. SELF-FEEDING —REQUIRES NO ATTENTION! The sensational Red Tornado generates a tornado of smashing, grinding power. Works from 110 or 220 volt outlet. Special ½ H.P. motor swings hammer at terrific speed. Uses little current. Selected for the feed room of New York World's Fair Electrified Farm. R. C. Wurzel, Mich., says: "After using 6 mos. have ground 3100 bu. oats, barley and corn. Pleased with results." Pay $5 down. Use mill at our risk 30 days. Price and terms easy. Send no money now. Write for details.
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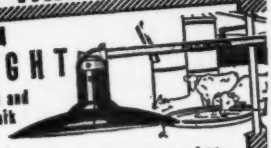
YARD LIGHT

Light your farm yards and you'll get the rush work done on time!



Here's an inexpensive Yard light for your farm that will make you wonder how you ever got along without it! Manufactured by Benjamin, world leader in lighting equipment, this reflector is made of lifetime porcelain enameled steel. Easy to keep clean. Comes packaged ready for installation. Nothing else to buy. Package contains reflector, socket, conduit arm, wall fitting, bolts and 2 ft. wire leads.

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VARIETY-LITE

NEW LOW COST PORTABLE FLOODLIGHT FOR FARM FUN on the farm! Think of how your family and friends will enjoy a yard floodlighted for night sports, night parties, etc. Provides protection against prowlers, too! Use it for night work. Take it from one location to another. A quality product made of lifetime porcelain enameled steel. Complete with unbreakable plug and extension cord . . . efficient—low priced.

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As a reader of ELECTRICITY ON THE FARM you are entitled to our buyers' information service free of cost. When looking for information about equipment or material that you plan to buy, first read carefully the advertisements in this issue. They are your best guide. Then, if you do not find what you want, just write and tell us what you need and we will send your request to qualified manufacturers. Readers' Service Dept., Electricity on the Farm, 24 West 40th Street, New York.

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Names and addresses of manufacturers of the articles described in this column will gladly be furnished upon request to What's New Department, ELECTRICITY ON THE FARM, *24 West 40th Street, New York, N. Y.*

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This is an extra large electric washer holding 20 gallons to the load line and with capacity for 8 pounds of clothes. All the usual features of good, modern washers at a new low price.

New Publication

ILLUSTRATED CATALOG: One of the most beautifully printed and illustrated catalogs we have seen comes from Peerless Pump Division, Food Machinery Corp., Los Angeles, Cal. It is on irrigation pumps, contains 64 pages, including many curves, diagrams and tables on pumps and pumping.

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